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<110>  Turner, C. Alexander Jr.
       Mathur, Brian
       Friddle, Carl Johan

<120>  Novel Human Kinases and Polynucleotides Encoding the Same

<130>  LEX-0332-USA

<150>  US 60/282,036
<151>  2001-04-06

<160>  6

<170>  FastSEQ for Windows Version 4.0

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<212>  DNA
<213>  homo sapiens

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aacctgcttt tggatgagaa aaacaacatc cgcattgcag acttcggcat ggcgtccctg 540
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aaagcagaca tcgtccatgc ctttctgtcg atccccagcc tgagtcacag tgtgctgtca 1920
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cagaccagct tcagggccga gtacaaggcc agtggcggcc cctccgtctt ccaaaagccc 1980
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ggcagcggag gtggtggcat ctactccgtc accttcactc tcatctcggg tcccagccgt 2100
cggttcaagc gagtggtgga gaccatccag gcacagctcc tgagcactca tgaccagccc 2160
tccgtgcagg ccctggcaga cgagaagaac ggggcccaga cccggcctgc tggtgcccca 2220
ccccgaagcc tgcagccccc acccggccgc ccagacccag agctgagcag ctctccccgc 2280
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<211> 778
<212> PRT
<213> homo sapiens

<400> 2

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             20                  25                  30
Pro Tyr Arg Leu Glu Lys Thr Leu Gly Lys Gly Gln Thr Gly Leu Val
         35                  40                  45
Lys Leu Gly Val His Cys Ile Thr Gly Gln Lys Val Ala Ile Lys Ile
     50                  55                  60
Val Asn Arg Glu Lys Leu Ser Glu Ser Val Leu Met Lys Val Glu Arg
65                  70                  75                  80
Glu Ile Ala Ile Leu Lys Leu Ile Glu His Pro His Val Leu Lys Leu
                 85                  90                  95
His Asp Val Tyr Glu Asn Lys Lys Tyr Leu Tyr Leu Val Leu Glu His
             100                 105                 110
Val Ser Gly Gly Glu Leu Phe Asp Tyr Leu Val Lys Lys Gly Arg Leu
         115                 120                 125
Thr Pro Lys Glu Ala Arg Lys Phe Phe Arg Gln Ile Val Ser Ala Leu
     130                 135                 140
Asp Phe Cys His Ser Tyr Ser Ile Cys His Arg Asp Leu Lys Pro Glu
145                 150                 155                 160
Asn Leu Leu Leu Asp Glu Lys Asn Asn Ile Arg Ile Ala Asp Phe Gly
                 165                 170                 175
Met Ala Ser Leu Gln Val Gly Asp Ser Leu Leu Glu Thr Ser Cys Gly
             180                 185                 190
Ser Pro His Tyr Ala Cys Pro Glu Val Ile Lys Gly Glu Lys Tyr Asp
         195                 200                 205
Gly Arg Arg Ala Asp Met Trp Ser Cys Gly Val Ile Leu Phe Ala Leu
     210                 215                 220
Leu Val Gly Ala Leu Pro Phe Asp Asp Asp Asn Leu Arg Gln Leu Leu
225                 230                 235                 240
Glu Lys Val Lys Arg Gly Val Phe His Met Pro His Phe Ile Pro Pro
                 245                 250                 255
Asp Cys Gln Ser Leu Leu Arg Gly Met Ile Glu Val Glu Pro Glu Lys
             260                 265                 270
Arg Leu Ser Leu Glu Gln Ile Gln Lys His Pro Trp Tyr Leu Gly Gly
         275                 280                 285
Lys His Glu Pro Asp Pro Cys Leu Glu Pro Ala Pro Gly Arg Arg Val
     290                 295                 300
Ala Met Arg Ser Leu Pro Ser Asn Gly Glu Leu Asp Pro Asp Val Leu
305                 310                 315                 320
Glu Ser Met Ala Ser Leu Gly Cys Phe Arg Asp Arg Glu Arg Leu His
                 325                 330                 335
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2

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Arg Glu Leu Arg Ser Glu Glu Glu Asn Gln Glu Lys Met Ile Tyr Tyr
        340                     345                     350
Leu Leu Leu Asp Arg Lys Glu Arg Tyr Pro Ser Cys Glu Asp Gln Asp
        355                     360                     365
Leu Pro Pro Arg Asn Asp Val Asp Pro Pro Arg Lys Arg Val Asp Ser
        370                     375                     380
Pro Met Leu Ser Arg His Gly Lys Arg Arg Pro Glu Arg Lys Ser Met
385                     390                     395                     400
Glu Val Leu Ser Ile Thr Asp Ala Gly Gly Gly Gly Ser Pro Val Pro
                405                     410                     415
Thr Arg Arg Ala Leu Glu Met Ala Gln His Ser Gln Arg Ser Arg Ser
                420                     425                     430
Val Ser Gly Ala Ser Thr Gly Leu Ser Ser Ser Pro Leu Ser Ser Pro
        435                     440                     445
Arg Ser Pro Val Phe Ser Phe Ser Pro Glu Pro Gly Ala Gly Asp Glu
    450                     455                     460
Ala Arg Gly Gly Gly Ser Pro Thr Ser Lys Thr Gln Thr Leu Pro Ser
465                     470                     475                     480
Arg Gly Pro Arg Gly Gly Gly Ala Gly Glu Gln Pro Pro Pro Ser
                485                     490                     495
Ala Arg Ser Thr Pro Leu Pro Gly Pro Pro Gly Ser Pro Arg Ser Ser
                500                     505                     510
Gly Gly Thr Pro Leu His Ser Pro Leu His Thr Pro Arg Ala Ser Pro
        515                     520                     525
Thr Gly Thr Pro Gly Thr Thr Pro Pro Pro Ser Pro Gly Gly Gly Val
        530                     535                     540
Gly Gly Ala Ala Trp Arg Ser Arg Leu Asn Ser Ile Arg Asn Ser Phe
545                     550                     555                     560
Leu Gly Ser Pro Arg Phe His Arg Arg Lys Met Gln Val Pro Thr Ala
                565                     570                     575
Glu Glu Met Ser Ser Leu Thr Pro Glu Ser Ser Pro Glu Leu Ala Lys
                580                     585                     590
Arg Ser Trp Phe Gly Asn Phe Ile Ser Leu Asp Lys Glu Glu Gln Ile
        595                     600                     605
Phe Leu Val Leu Lys Asp Lys Pro Leu Ser Ser Ile Lys Ala Asp Ile
    610                     615                     620
Val His Ala Phe Leu Ser Ile Pro Ser Leu Ser His Ser Val Leu Ser
625                     630                     635                     640
Gln Thr Ser Phe Arg Ala Glu Tyr Lys Ala Ser Gly Gly Pro Ser Val
                645                     650                     655
Phe Gln Lys Pro Val Arg Phe Gln Val Asp Ile Ser Ser Ser Glu Gly
                660                     665                     670
Pro Glu Pro Ser Pro Arg Arg Asp Gly Ser Gly Gly Gly Gly Ile Tyr
        675                     680                     685
Ser Val Thr Phe Thr Leu Ile Ser Gly Pro Ser Arg Arg Phe Lys Arg
        690                     695                     700
Val Val Glu Thr Ile Gln Ala Gln Leu Leu Ser Thr His Asp Gln Pro
705                     710                     715                     720
Ser Val Gln Ala Leu Ala Asp Glu Lys Asn Gly Ala Gln Thr Arg Pro
                725                     730                     735
Ala Gly Ala Pro Pro Arg Ser Leu Gln Pro Pro Pro Gly Arg Pro Asp
                740                     745                     750
Pro Glu Leu Ser Ser Ser Pro Arg Arg Gly Pro Pro Lys Asp Lys Lys
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Leu Leu Ala Thr Asn Gly Thr Pro Leu Pro
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3

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<211> 2289
<212> DNA
<213> homo sapiens

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ccagggaccc atgggaattg gagtctcttt ctcccaagga tcatgggaat tggagttctc 180
tgccaccagg agccagtgga agtgggagac gaggcccttt ggtcctccac atgccccttc 240
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gagctattcg actacctggt aaagaagggg agactgacgc caaggaggc ccgaaagttc 360
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gcgtgtccag aggtgattaa gggggaaaaa tatgatggcc gccgggcaga catgtggagc 600
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cccgacgtcc tagagagcat ggcatcactg ggctgcttca gggaccgcga gaggctgcat 960
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<210> 4
<211> 762
<212> PRT
<213> homo sapiens

<400> 4
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Phe Leu Pro Gly Ser Asp Gly Asn Trp Asn Leu Phe Leu Pro Gly Ile

4

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Asn Gly Asn Trp Ser Leu Phe Leu Pro Gly Thr His Gly Asn Trp Ser
          35                        40                         45
Leu Phe Leu Pro Arg Ile Met Gly Ile Gly Val Leu Cys His Gln Glu
       50                        55                         60
Pro Val Glu Val Gly Asp Glu Ala Leu Trp Ser Ser Thr Cys Pro Phe
65                        70                         75                 80
Gln Pro Ser Ala Pro Ser Ile Ser Phe Arg Tyr Leu Val Leu Glu His
                   85                        90                         95
Val Ser Gly Gly Glu Leu Phe Asp Tyr Leu Val Lys Lys Gly Arg Leu
                 100                       105                        110
Thr Pro Lys Glu Ala Arg Lys Phe Phe Arg Gln Ile Val Ser Ala Leu
          115                       120                        125
Asp Phe Cys His Ser Tyr Ser Ile Cys His Arg Asp Leu Lys Pro Glu
    130                       135                        140
Asn Leu Leu Leu Asp Glu Lys Asn Asn Ile Arg Ile Ala Asp Phe Gly
145                       150                        155                160
Met Ala Ser Leu Gln Val Gly Asp Ser Leu Leu Glu Thr Ser Cys Gly
                 165                       170                        175
Ser Pro His Tyr Ala Cys Pro Glu Val Ile Lys Gly Glu Lys Tyr Asp
             180                       185                        190
Gly Arg Arg Ala Asp Met Trp Ser Cys Gly Val Ile Leu Phe Ala Leu
          195                       200                        205
Leu Val Gly Ala Leu Pro Phe Asp Asp Asp Asn Leu Arg Gln Leu Leu
       210                       215                        220
Glu Lys Val Lys Arg Gly Val Phe His Met Pro His Phe Ile Pro Pro
225                       230                        235                240
Asp Cys Gln Ser Leu Leu Arg Gly Met Ile Glu Val Glu Pro Glu Lys
                 245                       250                        255
Arg Leu Ser Leu Glu Gln Ile Gln Lys His Pro Trp Tyr Leu Gly Gly
                 260                       265                        270
Lys His Glu Pro Asp Pro Cys Leu Glu Pro Ala Pro Gly Arg Arg Val
             275                       280                        285
Ala Met Arg Ser Leu Pro Ser Asn Gly Glu Leu Asp Pro Asp Val Leu
          290                       295                        300
Glu Ser Met Ala Ser Leu Gly Cys Phe Arg Asp Arg Glu Arg Leu His
305                       310                        315                320
Arg Glu Leu Arg Ser Glu Glu Glu Asn Gln Glu Lys Met Ile Tyr Tyr
                 325                       330                        335
Leu Leu Leu Asp Arg Lys Glu Arg Tyr Pro Ser Cys Glu Asp Gln Asp
             340                       345                        350
Leu Pro Pro Arg Asn Asp Val Asp Pro Pro Arg Lys Arg Val Asp Ser
          355                       360                        365
Pro Met Leu Ser Arg His Gly Lys Arg Arg Pro Glu Arg Lys Ser Met
    370                       375                        380
Glu Val Leu Ser Ile Thr Asp Ala Gly Gly Gly Gly Ser Pro Val Pro
385                       390                        395                400
Thr Arg Arg Ala Leu Glu Met Ala Gln His Ser Gln Arg Ser Arg Ser
             405                       410                        415
Val Ser Gly Ala Ser Thr Gly Leu Ser Ser Ser Pro Leu Ser Ser Pro
          420                       425                        430
Arg Ser Pro Val Phe Ser Phe Ser Pro Glu Pro Gly Ala Gly Asp Glu
          435                       440                        445
Ala Arg Gly Gly Gly Ser Pro Thr Ser Lys Thr Gln Thr Leu Pro Ser
    450                       455                        460
Arg Gly Pro Arg Gly Gly Gly Ala Gly Glu Gln Pro Pro Pro Pro Ser
```

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          465                      470                      475                      480
    Ala Arg Ser Thr Pro Leu Pro Gly Pro Pro Gly Ser Pro Arg Ser Ser
                      485                      490                      495
    Gly Gly Thr Pro Leu His Ser Pro Leu His Thr Pro Arg Ala Ser Pro
                  500                      505                      510
    Thr Gly Thr Pro Gly Thr Thr Pro Pro Pro Ser Pro Gly Gly Gly Val
              515                      520                      525
    Gly Gly Ala Ala Trp Arg Ser Arg Leu Asn Ser Ile Arg Asn Ser Phe
          530                      535                      540
    Leu Gly Ser Pro Arg Phe His Arg Arg Lys Met Gln Val Pro Thr Ala
    545                      550                      555                      560
    Glu Glu Met Ser Ser Leu Thr Pro Glu Ser Ser Pro Glu Leu Ala Lys
                      565                      570                      575
    Arg Ser Trp Phe Gly Asn Phe Ile Ser Leu Asp Lys Glu Glu Gln Ile
                  580                      585                      590
    Phe Leu Val Leu Lys Asp Lys Pro Leu Ser Ser Ile Lys Ala Asp Ile
              595                      600                      605
    Val His Ala Phe Leu Ser Ile Pro Ser Leu Ser His Ser Val Leu Ser
          610                      615                      620
    Gln Thr Ser Phe Arg Ala Glu Tyr Lys Ala Ser Gly Gly Pro Ser Val
    625                      630                      635                      640
    Phe Gln Lys Pro Val Arg Phe Gln Val Asp Ile Ser Ser Ser Glu Gly
                      645                      650                      655
    Pro Glu Pro Ser Pro Arg Arg Asp Gly Ser Gly Gly Gly Ile Tyr
                  660                      665                      670
    Ser Val Thr Phe Thr Leu Ile Ser Gly Pro Ser Arg Arg Phe Lys Arg
              675                      680                      685
    Val Val Glu Thr Ile Gln Ala Gln Leu Leu Ser Thr His Asp Gln Pro
          690                      695                      700
    Ser Val Gln Ala Leu Ala Asp Glu Lys Asn Gly Ala Gln Thr Arg Pro
    705                      710                      715                      720
    Ala Gly Ala Pro Pro Arg Ser Leu Gln Pro Pro Pro Gly Arg Pro Asp
                      725                      730                      735
    Pro Glu Leu Ser Ser Ser Pro Arg Arg Gly Pro Pro Lys Asp Lys Lys
                  740                      745                      750
    Leu Leu Ala Thr Asn Gly Thr Pro Leu Pro
              755                      760
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<210> 5
<211> 2112
<212> DNA
<213> homo sapiens

<400> 5
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ggtgagctat tcgactacct ggtaaagaag gggagactga cgcccaagga ggcccgaaag 180
ttcttccgcc agattgtgtc tgcgctggac ttctgccaca gctactccat ctgccacaga 240
gacctaaagc ccgagaacct gcttttggat gagaaaaaca acatccgcat tgcagacttc 300
ggcatggcgt ccctgcaggt gggggacagc ctcctggaga ccagctgcgg tccccccat 360
tatgcgtgtc cagaggtgat taaggggga aaatatgatg ccgccgggc agacatgtgg 420
agctgtggag tcatcctctt cgccctgctc gtgggggctc tgccctttga tgacgacaac 480
ctccgccagc tgctggagaa ggtgaaacgg ggcgtcttcc acatgcccca cttcattcct 540
ccagattgcc agagcctcct gaggggaatg atcgaagtgg agcccgaaaa aaggctcagt 600
ctggagcaaa ttcagaaaca tccttggtac ctaggcggga aacacgagcc agacccgtgc 660
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catcgcgagc tgcgcagtga ggaggagaac caagaaaaga tgatatatta tctgctttg 840
gatcggaagg agcggtatcc cagctgtgag gaccaggacc tgcctccccg gaatgatgtt 900
gaccccccc ggaagcgtgt ggattctccc atgctgagcc gtcacgggaa gcggcgacca 960
gagcggaagt ccatggaagt cctgagcatc accgatgccg ggggtggtgg ctcccctgta 1020
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cagacgctgc cttctcgggg ccccaggggt ggggcgccg gggagcagcc cccgcccccc 1260
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tccccgcgac gggacggcag cggaggtggt ggcatctact ccgtcacctt cactctcatc 1860
tcgggtccca gccgtcggtt caagcgagtg gtggagacca tccaggcaca gctcctgagc 1920
actcatgacc agccctccgt gcaggccctg cagacgaga agaacggggc ccagacccgg 1980
cctgctggtg ccccaccccg aagcctgcag cccccacccg gccgcccaga cccagagctg 2040
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<210> 6
<211> 703
<212> PRT
<213> homo sapiens

<400> 6
Met Lys Val Glu Arg Glu Ile Ala Ile Leu Lys Leu Ile Glu His Pro
 1               5                  10                  15
His Val Leu Lys Leu His Asp Val Tyr Glu Asn Lys Lys Tyr Leu Tyr
            20                  25                  30
Leu Val Leu Glu His Val Ser Gly Gly Glu Leu Phe Asp Tyr Leu Val
         35                  40                  45
Lys Lys Gly Arg Leu Thr Pro Lys Glu Ala Arg Lys Phe Phe Arg Gln
      50                  55                  60
Ile Val Ser Ala Leu Asp Phe Cys His Ser Tyr Ser Ile Cys His Arg
65                  70                  75                  80
Asp Leu Lys Pro Glu Asn Leu Leu Leu Asp Glu Lys Asn Asn Ile Arg
                  85                  90                  95
Ile Ala Asp Phe Gly Met Ala Ser Leu Gln Val Gly Asp Ser Leu Leu
               100                 105                 110
Glu Thr Ser Cys Gly Ser Pro His Tyr Ala Cys Pro Glu Val Ile Lys
            115                 120                 125
Gly Glu Lys Tyr Asp Gly Arg Arg Ala Asp Met Trp Ser Cys Gly Val
         130                 135                 140
Ile Leu Phe Ala Leu Leu Val Gly Ala Leu Pro Phe Asp Asp Asp Asn
145                 150                 155                 160
Leu Arg Gln Leu Leu Glu Lys Val Lys Arg Gly Val Phe His Met Pro
                  165                 170                 175
His Phe Ile Pro Pro Asp Cys Gln Ser Leu Leu Arg Gly Met Ile Glu
               180                 185                 190
```

7

```
Val Glu Pro Glu Lys Arg Leu Ser Leu Glu Gln Ile Gln Lys His Pro
        195                 200                 205
Trp Tyr Leu Gly Gly Lys His Glu Pro Asp Pro Cys Leu Glu Pro Ala
        210                 215                 220
Pro Gly Arg Arg Val Ala Met Arg Ser Leu Pro Ser Asn Gly Glu Leu
225                 230                 235                 240
Asp Pro Asp Val Leu Glu Ser Met Ala Ser Leu Gly Cys Phe Arg Asp
                245                 250                 255
Arg Glu Arg Leu His Arg Glu Leu Arg Ser Glu Glu Glu Asn Gln Glu
                260                 265                 270
Lys Met Ile Tyr Tyr Leu Leu Leu Asp Arg Lys Glu Arg Tyr Pro Ser
        275                 280                 285
Cys Glu Asp Gln Asp Leu Pro Pro Arg Asn Asp Val Asp Pro Pro Arg
        290                 295                 300
Lys Arg Val Asp Ser Pro Met Leu Ser Arg His Gly Lys Arg Arg Pro
305                 310                 315                 320
Glu Arg Lys Ser Met Glu Val Leu Ser Ile Thr Asp Ala Gly Gly Gly
                325                 330                 335
Gly Ser Pro Val Pro Thr Arg Arg Ala Leu Glu Met Ala Gln His Ser
                340                 345                 350
Gln Arg Ser Arg Ser Val Ser Gly Ala Ser Thr Gly Leu Ser Ser Ser
        355                 360                 365
Pro Leu Ser Ser Pro Arg Ser Pro Val Phe Ser Phe Ser Pro Glu Pro
        370                 375                 380
Gly Ala Gly Asp Glu Ala Arg Gly Gly Gly Ser Pro Thr Ser Lys Thr
385                 390                 395                 400
Gln Thr Leu Pro Ser Arg Gly Pro Arg Gly Gly Gly Ala Gly Glu Gln
                405                 410                 415
Pro Pro Pro Pro Ser Ala Arg Ser Thr Pro Leu Pro Gly Pro Pro Gly
                420                 425                 430
Ser Pro Arg Ser Ser Gly Gly Thr Pro Leu His Ser Pro Leu His Thr
        435                 440                 445
Pro Arg Ala Ser Pro Thr Gly Thr Pro Gly Thr Thr Pro Pro Pro Ser
        450                 455                 460
Pro Gly Gly Gly Val Gly Gly Ala Ala Trp Arg Ser Arg Leu Asn Ser
465                 470                 475                 480
Ile Arg Asn Ser Phe Leu Gly Ser Pro Arg Phe His Arg Arg Lys Met
                485                 490                 495
Gln Val Pro Thr Ala Glu Glu Met Ser Ser Leu Thr Pro Glu Ser Ser
                500                 505                 510
Pro Glu Leu Ala Lys Arg Ser Trp Phe Gly Asn Phe Ile Ser Leu Asp
        515                 520                 525
Lys Glu Glu Gln Ile Phe Leu Val Leu Lys Asp Lys Pro Leu Ser Ser
        530                 535                 540
Ile Lys Ala Asp Ile Val His Ala Phe Leu Ser Ile Pro Ser Leu Ser
545                 550                 555                 560
His Ser Val Leu Ser Gln Thr Ser Phe Arg Ala Glu Tyr Lys Ala Ser
                565                 570                 575
Gly Gly Pro Ser Val Phe Gln Lys Pro Val Arg Phe Gln Val Asp Ile
                580                 585                 590
Ser Ser Ser Glu Gly Pro Glu Pro Ser Pro Arg Arg Asp Gly Ser Gly
        595                 600                 605
Gly Gly Gly Ile Tyr Ser Val Thr Phe Thr Leu Ile Ser Gly Pro Ser
        610                 615                 620
Arg Arg Phe Lys Arg Val Val Glu Thr Ile Gln Ala Gln Leu Leu Ser
625                 630                 635                 640
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Thr His Asp Gln Pro Ser Val Gln Ala Leu Ala Asp Glu Lys Asn Gly
            645   650   655
Ala Gln Thr Arg Pro Ala Gly Ala Pro Pro Arg Ser Leu Gln Pro Pro
            660   665   670
Pro Gly Arg Pro Asp Pro Glu Leu Ser Ser Ser Pro Arg Arg Gly Pro
            675   680   685
Pro Lys Asp Lys Lys Leu Leu Ala Thr Asn Gly Thr Pro Leu Pro
        690   695   700